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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/614,993

07/08/2003

Bryan E. Bloodworth

TI-35566

8156

7590

02/23/2005

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EXAMINER

NEGRON, DANIEL L

ART UNIT

PAPER NUMBER

2651

DATE MAILED: 02/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/614,993

Applicant(s)

BLOODWORTH ET AL.

Examiner

Daniell L. Negrón

Art Unit

2651

– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 July 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11, 16, 17 and 23-32 is/are rejected.
- 7) ☒ Claim(s) 12-15 and 18-22 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-9 and 24-32 are rejected under 35 U.S.C. 102(b) as being anticipated by Ramalho et al U.S. Patent No. 5,841,603.

Regarding claim 1, Ramalho et al discloses a current directing circuit a first write head (6) connection node and a second write head connection node (8) wherein the current directing circuit is adapted to provide current to the first write head connection node and to the second write head connection node (column 10, lines 49-60) and a common mode generator, coupled to the current directing circuit, adapted to provide additional current to the first write head connection node and to the second write head connection node (see Figs 4 and 5 and disclosure thereof).

Ramalho et al further disclose a current directing circuit wherein the first write head connection node is adapted to produce a first write signal, wherein the second write head connection node is adapted to produce a second write signal and wherein the current and the additional current are adapted to establish a voltage across the first write head connection node and the second write head connection node (column 10, lines 26-31). Furthermore the currents disclosed by Ramalho et al are used for the purpose of providing a common mode voltage across the write head via nodes 6 and 8.

Ramalho et al further disclose a current directing circuit wherein the voltage is adapted to be pulled toward a first polarity based on the first write signal (i.e. first value of information signal  $U_i$ ) and toward a second polarity based on the second write signal (i.e. second value of information signal  $U_i$ ) and wherein the voltage pulled toward the first polarity and the voltage pulled toward the second polarity are substantially centered about a common mode voltage (column 10, lines 24-37).

Regarding claims 2 and 3, Ramalho et al further disclose a current directing circuit wherein the current and the additional current are provided contemporaneously and independently (column 3, lines 11-19 and column 12, lines 34-36).

Regarding claims 4-9, Ramalho et al disclose a current directing circuit wherein the voltage across the first write head connection node is pulled toward a positive supply voltage and the voltage across the second write head connection node is pulled toward a negative potential for first and second durations (column 17, lines 16 and 30). Ramalho et al discloses that voltage is pulled in directions corresponding to the directions of an information signal and it is considered that the durations of the pulls also correspond to the duration of the transitions of the information signal.

Regarding claims 24-32, method claims 24-32 are drawn to the method of using the corresponding apparatus claimed in claims 1-9. Therefore method claims 24-32 correspond to apparatus claims 1-9 and are rejected for the same reasons of anticipation as used above.

*Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 10, 11, 16, 17, and 23 rejected under 35 U.S.C. 103(a) as being unpatentable over Ramalho et al U.S. Patent No. 5,841,603 in view of Leighton et al U.S. Patent No. 6,285,221

Regarding claim 10, 16, and 17, Ramalho et al discloses a preamplifier, comprising a common mode generator (Fig. 5) an H-bridge circuit (Fig. 1) a current mirror (14, 26, 30, and 38) coupled to the common mode generator and to the H-bridge circuit, a first write head connection node (6) adapted to produce a first write signal (i.e. first value of information signal  $U_1$ ) wherein the first write head connection node is coupled to the H-bridge circuit and a second write head connection node (8) adapted to produce a second write signal (i.e. second value of information signal  $U_2$ ), wherein the second write head connection node is coupled to the H-bridge circuit wherein the common mode generator is adapted to provide current wherein the current is adapted to establish a voltage across the first write head connection node and the second write head connection node, wherein the voltage is adapted to be pulled toward a first polarity based on the first write signal and toward a second polarity based on the second write signal and wherein the voltage pulled toward the first polarity and the voltage pulled toward the second polarity are substantially centered about a common mode voltage (column 10, lines 49-60).

Ramalho et al further inherently discloses a preamplifier comprising a digital to analog

Art Unit: 2651

converter since a converter is considered necessary to change digital information signals received by the preamplifier such as 1's and 0's into the analog signals needed to adapt the write head to record data onto a medium.

Ramalho et al however fail to show an overshoot system coupled to the current mirror and the H-bridge circuit.

However, Leighton et al disclose a preamplifier coupled to the H-bridge circuit of a write drive used for the purpose of controlling the overshoot of a write current and suppressing ringing in the driver circuit (column 2, lines 11-18 and column 6, lines 41-55).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the preamplifier as disclosed by Ramalho et al with the teachings of an overshoot circuit taught by Leighton et al in order to obtain a writer driver circuit wherein increased data density capability is obtained and ringing is suppressed.

Regarding claim 11, Ramalho et al disclose a preamplifier further comprising a first current source coupled to the common mode generator (see Fig. 6 and disclosure thereof).

Regarding claim 23, Ramalho et al disclose a preamplifier wherein the first write signal and the second write signal are received by a write head (2) external to the preamplifier via an interconnect (i.e. nodes 6 and 8) coupled between the preamplifier and the write head (see Fig. 1).

#### ***Allowable Subject Matter***

4. Claims 12- 15 and 18-22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Art Unit: 2651

***Prior Art***

Voorman et al U.S. Patent No. 5,668,676 is cited as of interest for disclosure of an H-bridge circuit for a write driver comprising a common mode voltage circuit.

Nayebi et al U.S. Patent No. 6,175,463 is cited as of interest for disclosure of an H-bridge circuit for a write driver comprising current overshoot circuit.


***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniell L. Negrón whose telephone number is 703-305-6985. The examiner can normally be reached on Monday-Friday (8:30-6:00) alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David R. Hudspeth can be reached on 703-308-4825. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DLN   
February 18, 2005

  
DAVID HUDSPETH  
SUPERVISORY PATENT EXAMINER  
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